

DESCRIPTION OF BUILDING 70 TREATMENT SYSTEM

The plant operations in Building 70 involve the production of “shop air” – 100 psig, and high-pressure compressed air – up to 300 psig, for distribution throughout the plant. Air compression takes place in Building 70 located in the northeast corner of the site. Operations consist of six (6) 1000 HP, 3200 CFM Ingersoll Rand reciprocating three stage compressors (three on the east side of the building and three on the west). Any number (from 1 to 6) of these units may operate at any one time, in any combination, according to the air demands or load of the plant at that time.

Some of the largest consumers of shop air are the engine test facilities. Once completely assembled, each engine is tested under a variety of operating scenarios, according to exacting commercial, FAA, and military specifications. Once an engine is “hung” in a test cell, testing could proceed and continue – day & night – for several days. This means that the process of air compression may need to operate at some level of its capacity for one, two or all three shifts. In order to accommodate the constant demand for shop air, at least two compressors are running at all times.

The wastewater stream developed by this process is a combination of free oil, dissolved oil in water, and a very stable mechanical emulsion of compression condensate and cylinder oil. The condensate is ambient atmospheric humidity, which “rains” out of source (outside) air under the physical conditions developed in the compression chamber. The level of humidity varies with the season, ambient temperatures and weather conditions.

As the oily wastewater emulsion is developed, the compressor ejects the waste stream, which flows by gravity to one of two condensate sump/pump stations (one for the east side set of compressors, and one for the west side set). Each sump has a capacity of approximately 12 gallons.

Pumps are triggered on a set of float switches. Assuming the float range covers 75% of the capacity, at the high level signal, the pump will transfer approximately 9 gallons per minute -- running for about one minute – to a Great Lakes SRC-30 slant rib coalescing oil/water separator [OWS] (design capacity of 30 GPM).

This OWS acts as a primary separation and holding tank for the preprocessed wastewater. The operation of the oil and water separation process has been altered and enhanced in the following ways:

- A belt skimmer has been added to the primary separation tank,
- A pneumatic pump transfers product to an insulated stainless steel (head) tank where it is heated prior to final treatment,
- Free oil is skimmed from the heated head tank using a belt skimmer, and finally
- Emulsified and suspended oils are removed by a twin centrifugal treatment.

This sequence of treatments is designed to reduce the O&G concentration from about 3,000 ppm in the system influent to less than 100 ppm in the effluent discharge to the POTW.

The captured light phase is delivered to a waste oil tank. The tank contains a level gauge, which is monitored on a regular basis, by licensed Wastewater Operators. Oil removed from the Building 70 treatment is transferred to a centralized waste oil/water storage area then transported off-site for reclamation as non-hazardous recyclable material.

A skid-mounted final polishing treatment, consisting of a series of oleophilic filtering devices, is being considered for this facility. The objective of this final treatment step is to minimize the concentration of oil and grease in the discharge. The discharge goal is 30% of the oil and grease concentration at the Bennett Street Outfall. This treatment is voluntary and while approved by LWSC, it will not be required by the permit. The polishing unit may be removed from the treatment train with the approval of the Shift Supervisor and Water Programs Lead for routine maintenance, including filter bag change outs.